AN - C21/3

MODIFICATIONS TO TINY BASIC V1.2 TO OUTPUT TO A SERIAL PRINTER UNDER PROGRAM CONTROL.

Note: The printer UART has the following addresses:-

PORT Ø7 - UART data
PORT Ø6 - UART status

The significance of the bits in the status byte is as follows:-

D7 - TBMT (A '1' = Transmit Buffer is empty)
D5 - PINH (A '1' = Printer Inhibit)

We have fitted hardware to our own printer interface so that outputting to the status port Ø6 will set a latch high or low according to the polarity of the D5 data line. (The output of the latch is called 'PINH' and we can set it high or low by software or by an overruling front panel 'off - auto - on' switch).

The modifications to V1.2 consist of changing location Ø791 from 1A to 57 and inserting the extra code below. The change from '1A' to '57' alters a jump in the 'CRT' routine in the BASIC and jumps out to the new code just before the character (held in accumulator A) is output to the VDU. If the printer interface card is in the system, and if 'printer inhibit', 'PINH' is not '1' then the character will be output to the printer, followed by a 'line feed' if necessary. The following code replaces unused 'ØØ' bytes in Version V1.2).

Change E791 from 1A to 57 and the jump will be to E7E9:

```
E7E9    F5          START   PUSH AF      (Save A on stack)
        ØE Ø6       TEST    LD C, Ø6     (Set C to Port Ø6:- UART Status)
        CD 1DE7             CALL SUBR. "ANYONE THERE?"
          2Ø95              JR NZ TO 'EXIT' (i.e jump out if PINH = 1)
        CB78                BIT 7, B     (Test the 'TBMT' Bit)
        28 F5               JR Z TO 'TEST' (i.e Loop back until 'TB' is 'MT')
        ØC                  INC C        (Set C to Port Ø7:- UART Data)
        ED79                OUT (C), A   (Send the character, in A, to UART)
        18 86               JR TO 'CONTINUE' (Run out of space here in ROM
        ØØ                  NOP           jump somewhere where it's clear)
E78Ø    FE ØD       CONTINUE CP 'ØD'     (Was char ASCII CR?)
        3E ØA               LD 'ØA'      (Load 'Line Feed')
        28 64               JR Z TO 'TEST' (If char was ØD, print the 'ØA' we loaded)
        F1          EXIT    POP AF       (Restore A)
        1823                JR TO E7AC   (Go to where we used to go without
        ØØ                  NOP           this routine)
```

Subroutine "ANYONE THERE" (Can also be used for testing other UART Status bytes)

```
E71D    ED 4Ø               IN B, (C)    (B gets the Status at port C)
        CB 68               BIT 5, B     (See if there's an INH signal
        C9                  RET           Z=1 for INH, Z=Ø for enable)
                                         (Return; Note B still has the status
                                          e.g. TBMT, DAV etc.)
```

```
EXAMPLE     OUT  223, 6   ; REM PRINTER UNINHIBITED
            OUT   32, 6   ; REM PRINTER INHIBITED.
```

(Issue 3 : 6-1-81)

The new version of Tiny BASIC which runs on page 'E' (Version 5.Ø1) incorporates the above modifications D.M.P. 5-12-80